

Remarks

Applicant respectfully requests reconsideration of this application as new. The specification has been amended to correct minor informalities. Claims 1 and 13 have been amended. Claims 8-12 have been cancelled. New claims 19-27 have been added. Therefore claims 1, 6, 13, 17, and 19-27 are presented for examination.

35 U.S.C. §103(a) Rejection

Claims 1, 6, 13, and 17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chao (U.S. Patent No. 5,095,404) in view of Hamburgren (U.S. Patent No. 4,966,226). Applicant submits that the present claims are patentable over Chao in view of Hamburgren.

Claim 1, as amended, of the present application recites:

An apparatus, comprising:
an absorber section of a heat pipe attached to a first end of a base of the heat pipe to remove heat from a heat spreader, wherein the absorber section having a size of at least a surface area of the heat spreader; and
a dissipater section of the heat pipe attached to a second end of the base of the heat pipe, wherein a width of the dissipater section is greater than a width of the base of the heat pipe, and the dissipater section having a size of at least a surface area of the absorber section.

Chao discloses an arrangement for mounting and cooling high density, tab automated bonding (TAB) integrated circuit (IC) chips. (Chao at col. 1, ll. 5-8.) More specifically, a printed circuit board (PCB) is disclosed. The PCB has a top side, a bottom side and a hole, a heat spreader mounted on the bottom side of printed circuit board and having a pedestal which extends into the hole in the printed circuit board. The PCB

further includes a heat pipe underneath the printed circuit board and attached to the heat spreader and a high density TAB IC chip mounted on the top of the pedestal and electrically connected to pads on the top side of the printed circuit board. Heat produced by the chip during use will be spread out by the heat spreader and then removed by the heat pipe. (Col. 2, ll. 7-19.)

Hamburgen discloses a heatpipe having an evaporator fabricated out of composite graphite material and having a hemispherical shape. Hamburgen further discloses two methods to fabricate such a heatpipe having an evaporator section with a hemispherical shape. (Hamburgen at Abstract.)

Applicant submits that Chao does not disclose or suggest an absorber section of a heat pipe having a size of at least a surface area of a heat spreader. Chao discloses an evaporator section 35 connected to a heat spreader 23, however there is no disclosure or suggestion of this evaporator section having a size of at least the surface area of the heat spreader. In addition, applicant submits that Chao does not disclose or suggest a dissipater section with a width greater than a width of a base of a heat pipe and having a size of at least a surface area of the absorber section. Applicants can find no disclosure or suggestion of this feature in Chao.

Furthermore, applicant can find no disclosure or suggestion of an absorber section of a heat pipe having a size of at least a surface area of a heat spreader in Hamburgen. Nor can application find any disclosure or suggestion of a dissipater section with a width greater than a width of a base of a heat pipe and having a size of at least a surface area of the absorber section.

Therefore, as neither Chao nor Hamburgien individually disclose or suggest the features of claim 1 of the present application, any combination of Chao or Hamburgien also would not disclose or suggest such features. As a result, claim 1 is patentable over Chao in view of Hamburgien.

Claims 6 and 19-22 depend from claim 1 and include additional limitations. Therefore, claims 6 and 19-22 are also patentable over Chao in view of Hamburgien.

Independent claim 13 also recites, in part, an absorber section of a heat pipe having a size of at least a surface area of a heat spreader and a dissipater section with a width greater than a width of a base of a heat pipe and having a size of at least a surface area of the absorber section. Therefore, claim 13 is patentable over Chao in view of Hamburgien for the reasons discussed above with respect to claim 1. Claims 17 and 23-27 depend from claim 13 and include additional limitations. As a result, claims 17 and 23-27 are also patentable over Chao in view of Hamburgien.

Applicant respectfully submits that the rejections have been overcome and that the claims are in condition for allowance. Accordingly, applicant respectfully requests the rejections be withdrawn and the claims be allowed.

The Examiner is requested to call the undersigned at (303) 740-1980 if there remains any issue with allowance of the case.


Applicant respectfully petitions for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17(a) for such an extension.

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

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